

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Serial No. 10/806,868

Inventor: Mark S. Schaefer

Title: METHOD AND SYSTEM FOR VEHICLE  
SOFTWARE CONFIGURATION UPDATE  
MANAGEMENT

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Filed: March 23, 2004

Group Art Unit: 2191

Examiner: Ted T. Vo

Attorney Docket: GP-304231

**SECOND APPEAL BRIEF**

Board of Patent Appeals and Interference  
US Patent and Trademark Office  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

This is the second Appeal Brief filed in this application.

Following filing of the first Appeal Brief, the Examiner re-opened prosecution and issued a Non-Final Office Action mailed July 3, 2008. On November 3, 2008, Appellant filed a second Notice of Appeal, and is now filing this second Appeal Brief to obtain Board review and action in this application.

Because the fees for filing the appeal and Appeal Brief have already been paid in this application, no such fees are believed due.

**(i) Real Party in Interest**

The real party in interest is the assignee of the Appellant who assigned all of his right, title and interest to General Motors Corporation, a Michigan corporation, having its principal place of business at 300 Renaissance Center, Detroit, Michigan 48265-3000.

**(ii) Related Appeals and Interferences**

None.

**(iii) Status of Claims**

In the Non-Final Office Action reopening prosecution mailed July 3<sup>rd</sup>, 2008, claims 28-48 were rejected under 35 U.S.C. §103(a). Claims 1-27 have previously been cancelled. The application does not contain any other claims. This appeal covers the rejections of claims 28-48.

**(iv) Status of Amendments**

No amendment to the claims has been entered subsequent to the Non-Final Office Action.

**(v) Summary of Claimed Subject Matter**

In accordance with 37 CFR 41.37(c)(1)(v), a concise explanation is provided below of subject matter defined in each of the independent claims involved in this appeal, with reference to the specification by page and line numbers and to the drawings by reference characters. Also in accordance with 37 CFR 41.37(c)(1)(v), for each dependent claim argued separately under the provisions of 37 CFR 41.37(c)(1)(vii), every means plus function as permitted by 35 U.S.C. 112, sixth paragraph, is identified and the structure, material, or acts described in the specification as corresponding to each claimed function is set forth with reference to the specification by page and line numbers, and to the drawings by reference characters.

**Independent Claim 28 –**

Independent claim 28 is directed to a method (300) for managing a software configuration update of a vehicle. See Fig. 3. The method includes identifying an updated version of a first software module for a first electronic module on the vehicle (Fig. 3, Block 320; Page 11, Lines 10-12); obtaining vehicle configuration data representative of a current software configuration on the vehicle, wherein the vehicle configuration data includes the versions of software modules currently installed in electronic modules connected to the vehicle telematics unit over a vehicle communication bus, and the vehicle configuration data identifies interdependencies between the software modules (Fig. 1, Blocks 112, 114, 116, and 120; Page 9, Lines 11-18); determining whether the updated version of the first software module is compatible with the current software configuration (Fig. 3, Block 330; Page 9, Line 26-Page 10, Line 1); and updating the first software module with the updated version by transferring the updated version of the first software module from the vehicle telematics unit to memory of the first electronic module via the communication bus if it is determined that the updated version of the first software module is compatible with the current software configuration (Fig. 3, Block 350; Page 13, Lines 8-10 and 13-15).

**Independent Claim 36 –**

Independent claim 36 is directed to a method (300) for managing a software configuration update of a vehicle. The method involves the steps of identifying an updated

version of a first software module available for installation in a first electronic module on the vehicle, wherein a previous version of the first software module is installed in the first electronic module on the vehicle (Fig. 3, Block 320; Page 11, Lines 10-13), obtaining the versions of one or more other software modules installed in one or more electronic modules on the vehicle (Fig. 3, Block 325; Page 9, Lines 15-17), identifying interdependencies between the updated version of the first software module and the one or more other software modules (Fig. 3, Block 330; Page 9, Lines 15-18), determining at the call center whether the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules (Fig. 2, Block 181; Page 12, Lines 1-5), and updating the first software module by transferring the updated version of the first software module from a vehicle telematics unit to the first electronic module via a communication bus if it is determined that the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules (Fig. 3, Block 350; Page 13, Lines 9-10 and 13-15).

Independent Claim 44 –

Independent claim 44 is directed to a method (300) for managing a software configuration update of a vehicle. The method comprises detecting at a vehicle telematics unit that a software module in an electronic module has been modified (Page 10, Lines 8-9), determining whether the modified software module is compatible with versions of other software modules currently installed on the vehicle, wherein the other software modules have interdependencies with the modified software module (Fig. 3, Block 330; Page 10, Lines 11-13); and if the modified software module is not determined to be compatible with the other interdependent software modules, replacing the version of at least one of the interdependent software modules so that the interdependent software modules are compatible with one another (Fig. 3, Block 350; Page 10, Lines 13-17).

Although the Appellants have provided the summary of claimed subject matter with references to specific embodiments of the invention to comply with the requirements set forth in the relevant provisions of 37 C.F.R., this summary has been provided to aid the Board in evaluating the appeal and is not intended to limit the meaning or definition of any terms in the claims. Furthermore, it should be appreciated that the above-provided reference numerals and

pages/line numbers are only for exemplary purposes, as other instances and/or embodiments of the claimed elements could appear elsewhere in the application.

**(vi) Grounds of Rejection to be Reviewed on Appeal**

The sole issue on appeal is whether claims 28-48 are unpatentable under 35 U.S.C. §103(a) as being obvious over Kincaid (U.S. Patent Publication No. 2004/0117785) in view of Kellerer et al. “(Auto) Mobile Communication in a Heterogeneous and Converged World,” IEEE Personal Communications, December 2001.

**(vii) Argument****Claims 28-44**

Claims 28-44 stand rejected under 35 U.S.C. §103(a) as being obvious over Kincaid in view of Kellerer. This rejection is respectfully traversed for at least the following reasons: 1) no proper reason has been provided as to why one would combine Kincaid's method of wirelessly receiving software files from a software upgrade server at a mobile station with Kellerer's use of a wireless device connected to a vehicle; and 2) neither the Kincaid publication nor the Kellerer reference disclose "a first electronic module on a vehicle" or "vehicle configuration data representative of a current software configuration on a vehicle." It is worthwhile mentioning that independent claims 36 and 44 were rejected under the same rationale as claim 28. In the rejection of claims 36 and 44, the Examiner repeats the analysis set forth for the rejection of claims 28 and 44 and mentions that claim 36 has the same functionality as claim 28.<sup>1</sup> While Appellant's arguments relating to claim 28 apply to the rejections of claims 36 and 44, it is worthwhile noting that claims 36 and 44 contain different limitations than claim 28.

*1) Claims 28, 36, and 44 – No Proper Reason Has Been Provided For Combining Kincaid's Method of Wirelessly Receiving Software Files From a Software Upgrade Server at a Mobile Station with Kellerer's Use of a Wireless Device Connected to a Vehicle*

Using Kincaid's method of updating a wireless device, there would be no reason to link the wireless device, capable of independent communications, to a vehicle as taught by Kellerer in order to receive software updates through a vehicle communications unit. The Office Action states that it would be obvious to "combine the teachings of telematics devices as a Gateway of Kellerer used to download software update in the method of Kincaid" and "[t]he plug-in will be conforming to the standard download for managing software configuration update that is available from a server for every remote device, including used in a vehicle, which has at least a network interface." [sic]<sup>2</sup> These statement are not readily understandable and the latter statement is not understood at all, but in any case fails to explain why one of ordinary skill would combine

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<sup>1</sup> Non-Final Office Action, July 3<sup>rd</sup>, 2008, pages 7 and 9.

<sup>2</sup> Non-Final Office Action, page 5, lines 6-10.

the teachings of Kincaid with Kellerer. On the contrary, there is no apparent reason why one would look to combine Kincaid's download manager for a wireless mobile station with Kellerer's vehicle communication capabilities. Kincaid already uses the communication capabilities of the wireless device to receive software updates without assistance of the vehicle. In paragraph 37, Kincaid discloses a mobile station 111 that comprises, *inter alia*, an antenna 205, radio frequency transceiver 210, transmit (TX) processing circuitry, and receive (RX) processing circuitry 225.<sup>3</sup> Also, Kincaid discloses a main processor 240 that establishes a communication link to a wireless network 100 and to a remote server via the Internet connection of wireless network 100. When the communications link is established, the main processor 240 requests a list of upgrades for a mobile station of its type.<sup>4</sup> After establishing the link, a DLM program manager 270 supervises the transfer, storage, and installation of various software components.<sup>5</sup> Given the communication capabilities taught by Kincaid, one of ordinary skill would find no advantage to link the mobile station 111 with a vehicle communications system to receive software updates. That is, even if a user of Kincaid's mobile station 111 was in or near a vehicle, the user would most sensibly update the station 111 using the RF transceiver included with the station 111 rather than link the station 111 to the vehicle (either wirelessly or via wire) and use the station 111 to control a vehicle telematics unit and receive software updates through the telematics unit. There has been no proper reason provided in the record or that is otherwise apparent from the prior art of record as to why one of ordinary skill in the art would abandon Kincaid's teaching of using the station's communication capability to update its software to instead undertake a more complicated approach of first linking the station with the vehicle and then using the vehicle to access and download software updates that then must be transferred from the telematics unit to the station.

Furthermore, Kincaid teaches updating software based on some triggering event. And while operator-initiated action is one of these events, Kincaid also teaches an automated periodic procedure or receipt of a notification message from a remote upgrade server.<sup>6</sup> The automated update procedure cannot reliably take place if communication of the updates depend on the user

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<sup>3</sup> Kincaid, U.S. Patent Publication 2004/0117785, paragraph 37.

<sup>4</sup> Kincaid, paragraph 44.

<sup>5</sup> Kincaid, paragraph 45.

<sup>6</sup> Kincaid, paragraph 44.



connecting mobile station 111 taught by Kincaid to the vehicle communication capability taught by Kellerer. For example, the user cannot reasonably predict the time at which the automated procedure will signal that the station 111 should receive a software update. For this reason as well, one of ordinary skill in the art would not look to incorporate Kellerer's approach into the update procedure taught by Kincaid.

*2) Claims 28, 36 and 44 – Neither the Kincaid Publication Nor the Kellerer Reference Disclose “A First Electronic Module On a Vehicle” or “Vehicle Configuration Data Representative of a Current Software Configuration on a Vehicle”*

Neither Kincaid nor Kellerer disclose an electronic module on a vehicle as disclosed by Appellant's claims. For example, the Examiner addresses Appellant's step of identifying an updated version of a first software module for a *first electronic module on the vehicle* by pointing to Kincaid's version identifier and a component/newer component/current version stored in a remote server. The Examiner admits that the software configuration update taught by Kincaid is not on a vehicle.<sup>7</sup> However, the Examiner argues that Kellerer teaches a gateway connecting a mobile phone and a vehicle.<sup>8</sup> But the Examiner's rationale never clearly identifies a first electronic module on the vehicle in either reference or how the combination of Kincaid and Kellerer would teach or otherwise disclose Appellant's claim element.

The Examiner points to the download module (DLM) space 263 as disclosing a first electronic module.<sup>9</sup> But Kincaid's download module (DLM) space 263 cannot reasonably be interpreted as disclosing Appellant's claim element because the DLM space 263 functions as storage space in memory 260 for storing DLMs 310, 320, 330, and 340. More specifically, Kincaid discloses the use of a wireless mobile station 111 that includes an antenna 205, radio frequency (RF) transceiver 210, transmit (TX) processing circuitry 215, microphone 220, and receive (RX) processing circuitry.<sup>10</sup> The mobile station 111 also includes memory 260 that further comprises a basic operating system (OS) program 261, download control program 262,

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<sup>7</sup> Non-Final Office Action, page 4, lines 20-21.

<sup>8</sup> Non-Final Office Action, page 5, lines 1-5.

<sup>9</sup> Non-Final Office Action, page 4, lines 1-3.

<sup>10</sup> Kincaid, paragraph 37.

and download module (DLM) space 263.<sup>11</sup> Each mobile station also includes a download module (DLM) manager that provides centralized management of all software components that are installed in the mobile station.<sup>12</sup> Kincaid's download module (DLM) space 263 stores a plurality of download modules (DLMs). In other words, the download module (DLM) space 263 is carried by the wireless device 111 and functions to store software on the wireless device 111.<sup>13</sup> Conversely, Appellant discloses electronic modules, such as vehicle control modules 114 and vehicle sensors 116, on a vehicle.<sup>14</sup> Examples of these modules are disclosed as engine control modules and brake control modules. Appellant's modules relate to the functioning of a vehicle and are not merely memory for storing software on a wireless device. Kincaid's general disclosure of hardware fails to disclose an electronic module as claimed by Appellant and as that term would be understood by those skilled in the art. While Kincaid does use the term "module," this use describes software components that are installed on a mobile station. Appellant appreciates that Kellerer teaches a gateway connecting a wireless device and a vehicle. However, Kellerer does not make up for the deficiencies of Kincaid. Connecting the wireless device of Kincaid as taught by Kellerer would not create electronic modules on a vehicle as recited in Appellant's claims.

Additionally, the Examiner provides no support for the premise that Kincaid and/or Kellerer disclose or otherwise teach vehicle configuration data representative of a current software configuration on a vehicle. The Examiner points to Kincaid alone as disclosing vehicle configuration data representative of a current software configuration on a vehicle.<sup>15</sup> But Kincaid makes no reference and contains no teachings involving vehicles. And Kellerer fails to disclose or otherwise teach vehicle configuration data as recited in Appellant's claim. More specifically, the gateway taught by Kellerer that links the wireless device and the vehicle is directed to allowing vehicle occupants easy use of vehicle communications capabilities and Appellant's can find no support in Kellerer that teaches vehicle configuration data representative of a current software configuration on a vehicle.

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<sup>11</sup> Kincaid, paragraph 37.

<sup>12</sup> Kincaid, paragraph 36.

<sup>13</sup> Kincaid, paragraph 47.

<sup>14</sup> Appellant's application, page 7, lines 16-24.

<sup>15</sup> Non-Final Office Action, page 4, lines 4-6.

Accordingly, for the reasons discussed above, the Examiner has not provided a *prima facie* case of obviousness, and Appellant respectfully submits that claims 28-48 are allowable over the prior art of record.

Conclusion

In view of the foregoing, the Appellants request Board action to overturn the rejections of all pending claims.

The Commissioner is authorized to charge any fees, or refund any overpayments, associated with this Appeal Brief to Deposit Account No. 07-0960.

Respectfully submitted,

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**(viii) Claims Appendix**

1-27. (Cancelled)

28. A method for managing a software configuration update of a vehicle, the method comprising the steps of:

identifying an updated version of a first software module for a first electronic module on the vehicle;

obtaining vehicle configuration data representative of a current software configuration on the vehicle, wherein the vehicle configuration data includes the versions of software modules currently installed in electronic modules connected to the vehicle telematics unit over a vehicle communication bus, and the vehicle configuration data identifies interdependencies between the software modules;

determining whether the updated version of the first software module is compatible with the current software configuration; and

updating the first software module with the updated version by transferring the updated version of the first software module from the vehicle telematics unit to memory of the first electronic module via the communication bus if it is determined that the updated version of the first software module is compatible with the current software configuration.

29. The method of claim 28, wherein the obtaining step further comprises retrieving the vehicle configuration data from a call center and the determining step further comprises determining at the call center whether the updated version of the first software module is compatible with the current software configuration.

30. The method of claim 28, wherein the obtaining step further comprises obtaining the versions of the software modules currently installed in one or more electronic modules connected to the vehicle telematics unit over a vehicle communication bus by interrogating the one or more electronic modules via the vehicle telematics unit.

31. The method of claim 30, further comprising the step of:

providing the obtained versions of the software modules currently installed to the call center; and

wherein the determining step further comprises determining at the call center whether the updated version of the first software module is compatible with the current software configuration.

32. The method of claim 30, wherein the obtaining step further comprises obtaining the interdependencies between the software modules from the call center, and the determining step further comprises determining at the vehicle telematics unit whether the updated version of the first software module is compatible with the current software configuration.

33. The method of claim 28, wherein, if it is determined that the updated version of the first software module is not compatible with the current software configuration, then the method further comprises the step of replacing at least one of the other interdependent software modules with a version of the at least one other interdependent software module that is compatible with the updated version of the first software module.

34. The method of claim 33, further comprising the steps of:  
determining which of the other interdependent software modules conflicts with the updated version of the first software module; and  
determining whether the conflicting software modules have a version available that is compatible with the updated version of the first software module.

35. The method of claim 27, further comprising the step of issuing a software request to the call center for the updated version of the first software module.

36. A method for managing a software configuration update of a vehicle, the method comprising the steps of:  
identifying an updated version of a first software module available for installation in a first electronic module on the vehicle, wherein a previous version of the first software module is installed in the first electronic module on the vehicle;

obtaining the versions of one or more other software modules installed in one or more electronic modules on the vehicle;

identifying interdependencies between the updated version of the first software module and the one or more other software modules;

determining at the call center whether the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules; and

updating the first software module by transferring the updated version of the first software module from a vehicle telematics unit to the first electronic module via a communication bus if it is determined that the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules.

37. The method of claim 36, wherein the step of identifying interdependencies further comprises retrieving vehicle configuration data from the call center, wherein the vehicle configuration data identifies interdependencies between the updated version of the first software module and one or more other software modules installed in the one or more electronic modules on the vehicle.

38. The method of claim 36, wherein the obtaining step further comprises obtaining the versions of the one or more other software modules by interrogating one or more electronic modules installed with the one or more other software modules; and

wherein the electronic modules are interrogated by the vehicle telematics unit over the vehicle communications bus for the versions of the one or more other software modules installed in the one or more electronic modules.

39. The method of claim 36, wherein the identifying interdependencies step further comprises identifying, at the call center, interdependencies between the updated version of the first software module and one or more other software modules installed in one or more of the electronic modules.

40. The method of claim 36, wherein, if it is determined that the updated version of the first software module is not compatible with the obtained versions of the one or more other installed

software modules, then the method further comprises the step of replacing at least one of the other installed software modules with a version of the at least one other installed software module that is compatible with the updated version of the first software module.

41. The method of claim 40, further comprising the steps of:

determining which of the obtained versions of the one or more other installed software modules conflicts with the updated version of the first software module; and

determining whether the conflicting software modules have a version available that is compatible with the updated version of the first software module.

42. The method of claim 36, wherein the step of identifying an updated version further comprises receiving a notification at the vehicle telematics unit from the call center that the updated version of the first software module is available for installation in the first electronic module on the vehicle.

43. The method of claim 36, wherein the step of identifying an updated version further comprises issuing a software request for each software module installed in the one or more electronic modules on the vehicle on a periodic basis and determining whether the latest versions of the software modules are installed on the vehicle.

44. A method for managing a software configuration update of a vehicle, the method comprising the steps of:

detecting at a vehicle telematics unit that a software module in an electronic module has been modified;

determining whether the modified software module is compatible with versions of other software modules currently installed on the vehicle, wherein the other software modules have interdependencies with the modified software module; and

if the modified software module is not determined to be compatible with the other interdependent software modules, replacing the version of at least one of the interdependent software modules so that the interdependent software modules are compatible with one another.

45. The method of claim 44, wherein the replacing step further comprises replacing the modified software module with a previous version of the modified software module that is compatible with the versions of the other interdependent software modules.

46. The method of claim 44, wherein the replacing step further comprises replacing the version of at least one of the other interdependent software modules with a version that is compatible with the modified software module.

47. The method of claim 44, wherein, if the modified software module is determined to not be compatible with the versions of the other interdependent software modules currently installed on the vehicle, then the method further comprises the step of determining whether any versions of the other interdependent software modules are available that are compatible with the modified software module; and, if so,

then the replacing step further comprises replacing the version of at least one other interdependent software module currently installed on the vehicle with the available compatible version.

48. The method of claim 44, further comprising the step of issuing a software flag to the call center in response to detecting that a software module on a electronic module has been modified.



**(ix) Evidence Appendix**

None.

**(x) Related Proceedings Appendix**

None.